



PTO/SB/08b (08-03)

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Substitute for form 1449B/PTO		Complete If Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary) Sheet 1 Of 9		Application Number	10/849,345
		Filing Date	May 19, 2004
		First Named Inventor	Robert H. Burgener, II
		Group Art Unit	2811
		Examiner Name	Thien F. Tran
		Attorney Docket Number	3398.2.9

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
TT	O1	AULBUR, W.; Density Functional Theory: Basic Ideas & Applications; Ohio State University.	
TT	O2	LOOK, D.C., and CLAFLIN, B.; P-type doping and devices based on ZnO; 08/2003; Wiley-VCH Verlag GmbH & Co.	
TT	O3	ZUNGER, A.; Practical Doping Principles; NCPV and Solar Program Review Meeting 2003; pp. 831-835.	
TT	O4	ZHANG, S.B., WEI, S.H., and ZUNGER, A.; Intrinsic n-type versus p-type doping asymmetry and the defect physics of ZnO; Physical Review B; 01/31/2001; pp. 075205-1 - 075205-7; Volume 63; The American Physical Society.	
TT	O5	LIMPIJUMNONG, S., ZHANG, S.B., WEI, S.H., and PARK C.H.; Doping by Large-Size-Mismatched Impurities: The Microscopic Origin of Arsenic- or Antimony-Doped p-Type Zinc Oxide; Physical Review Letters; 04/16/2004; Volume 92, Number 15; The American Physical Society.	
TT	O6	YAMAMOTO, T., and KATAYAMA-YOSHIDA, H.; Solution Using a Codoping Method to Unipolarity for the Fabrication of p-Type ZnO; Japanese Journal of Applied Physics; 02/15/1999; pp. L 166-L 169; Volume 38; Japanese Journal of Applied Physics Publication Board.	
TT	O7	PARK, C.H., ZHANG, S.B., and WEI, S.H.; Origin of p-type doping difficulty in ZnO: The impurity perspective; Physical Review B; 08/05/2002; pp. 073202-1 - 073202-3; Volume 66; The American Physical Society.	
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TT	O9	NONAKA, M., MATSUSHIMA, S., MIZUNO, M., and KOBAYASHI, K.; Electronic Structure of Group III Elements Doped into ZnO by Using Molecular Orbital Calculation; Chemistry Letters 2002; 02/20/2002; pp. 580-581; The Chemical Society of Japan.	
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TT	O12	LEE, E.-C., KIM, Y.-S., JIN, Y.-G., and CHANG, K.J.; First-Principles Study of p-Type Doping and Codoping in ZnO; Journal of the Korean Physical Society; 12/2001; pp. S23-S26; Volume 39.	
TT	O13	MORHAIN, C., TEISSEIRE, M., VEZIAN, S., VIGUE, F., RAYMOND, F., et al; Spectroscopy of Excitons, Bound Excitons and Impurities in h-ZnO Epilayers; 09/30/2001; pp. 881-885; Volume 229, Number 2; Wiley VCH; Berlin.	
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Examiner Signature	Thien F. Tran	Date Considered	3-1-2006
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TT	O15	WILKINSON, J., XIONG, G., UCER, K.B., and WILLIAMS, R.T.; Lifetime and Oscillator Strength of Excitonic Luminescence in Zinc Oxide; Department of Physics, Wake Forest University, Winston-Salem, NC.	
TT	O16	KOBAYASHI, A., SANKEY, O.F., and DOW, J.D.; Deep energy levels of defects in the wurtzite semiconductors AlN, CdS, CdSe, and ZnO; Physical Review B; 07/15/1983; pp. 946-956; Volume 28, Number 2; The American Physical Society.	
TT	O17	DANEU, N., REENIK, A., and BERNIK, S.; Grain Growth Control in Sb ₂ O ₃ -Doped Zinc Oxide; Journal of the American Ceramic Society; 2003; pp. 1379-1384; Volume 86, Number 8.	
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TT	O19	DUAN, X.L., YUAN, D.R., CHENG, X.F., SUN, H.Q., SUN, Z.H., et al; Microstructure and Properties of Co ²⁺ : ZnAl ₂ O ₄ /SiO ₂ Nanocomposite Glasses Prepared by Sol-Gel Method; Journal of the American Ceramic Society; 2005; pp. 399-403; Volume 88, Number 2.	
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TT	O22	BURDEN, A.P., BISHOP, H.E., BRIERLEY, M., FRIDAY, J.M., HOOD, C., et al.; Incorporating consumer-priced field emitting inks into arrays of triode devices; Solid State Electronics; 2001; pp. 987-996; Vol. 45; Printable Field Emitters Ltd.	
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TT	O26	ONG, H.C., LI, A.S.K., and DU, G.T.; Depth profiling of ZnO thin films by cathodoluminescence; Applied Physics Letters; 04/30/2001; pp. 2667-2669; Vol. 78, No. 18; American Institute of Physics.	
TT	O27	WASHINGTON, P.L., ONG, H.C., DAI, J.Y., and CHANG, R.P.H.; Determination of the optical constants of zinc oxide thin films by spectroscopic ellipsometry; Applied Physics Letter; 06/22/1998; pp. 3261-3263; Vol. 72, No. 25; American Institute of Physics.	
TT	O28	SEKIGUCHI, T., OHASHI, N., and YAMANE, H.; Cathodoluminescence Study on ZnO and GaN; Solid State Phenomena; 1998; pp. 171-182; Vols. 63-64; Scitech Publications; Switzerland.	
TT	O29	KOUYATE, D., RONFARD-HARET, J.-C., and KOSSANYI, J.; Photo- and electro-luminescence of rare earth-doped semiconducting zinc oxide electrodes: Emission from both the dopant and the support; Journal of Luminescence; 1991; pp. 205-210; Vol. 50; Elsevier Science Publishers B.V.	

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		Group Art Unit	2811
		Examiner Name	Thien F. Tran
		Attorney Docket Number	3398.2.9
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TT	O30	KOSSANYI, J., KOUYATE, D., POULIQUEN, J., RONFARD-HARET, J.C., VALAT, P., et al.; Photoluminescence of Semiconducting Zinc Oxide Containing Rare Earth Ions as Impurities; Journal of Luminescence; 1990; pp. 17-24; Vol. 46; Elsevier Science Publishers B.V. (north-Holland).	
TT	O31	WANG, Y.G., LAU, S.P., LEE, H.W., YU, S.F., TAY, B.K., et al.; Photoluminescence study of ZnO films prepared by thermal oxidation of Zn metallic films in air; Journal of Applied Physics; 07/01/2003; pp. 354-358; Vol. 94, No. 1; American Institute of Physics.	
TT	O32	YU, S.F., YUEN, C., LAU, S.P., WANG, Y.G., LEE, H.W., et al.; Ultraviolet amplified spontaneous emission from zinc oxide ridge waveguides on silicon substrate; Applied Physics Letter; 11/24/2003; pp. 4288-4290; Vol. 83, No. 21; American Institute of Physics.	
TT	O33	XIONG, G., WILKINSON, J., LYLES, J., UCER, K.B., and WILLIAMS, R.T.; Luminescence and stimulated emission in zinc oxide nanoparticles, films, and crystals.	
TT	O34	ONG, H.C., DAI, J.Y., and DU, G.T.; Studies of electronic structure of ZnO grain boundary and its proximity by using spatially resolved electron energy loss spectroscopy; Applied Physics Letter; 07/08/2002; pp. 277-279; Vol. 81, No. 2; American Institute of Physics.	
TT	O35	AGNE, T., GUAN, Z., LI, X.M., WOLF, H., and WICHERT, T.; Incorporation of the Donor Indium in Nanocrystalline ZnO; phys. stat. sol.; 2002; pp. 819-823; Vol. 229; WILEY-VCH Verlag Berlin GmbH; Berlin.	
TT	O36	QADRI, S.B., KIM, H., HORWITZ, J.S., and CHRISEY, D.B.; Transparent conducting films of ZnO-ZrO ₂ : Structure and properties; Journal of Applied Physics; 12/01/2000; pp. 6564-6566; Vol. 88, No. 11; American Institute of Physics.	
TT	O37	HAN, J., MANTAS, P.Q., and SENOS, A.M.R.; Grain growth in Mn-doped ZnO; Journal of the European Ceramic Society; 2000; 2753-2758; Vol. 20.	
TT	O38	JIN, Y., ZHANG, B., YANG, S., WANG, Y., CHEN, J., et al.; Room temperature UV emission of Mg _{1-x} Zn _x O films; Solid State Communications; 2001; pp. 409-413; Vol. 119; Elsevier Science Ltd.	
TT	O39	PETRIK, N.G., ALEXANDROV, A.B., and VALL, A.I.; Interfacial Energy Transfer during Gamma Radiolysis of Water on the Surface of ZrO ₂ and Some Other Oxides; J. Phys. Chem. B; 2001; pp. 5935-5944; Vol. 105; American Chemical Society.	
TT	O40	COUNIO, G., ESNOUF, S., GACON, T., and BOILLOT, J.-P.; CdS:Mn Nanocrystals in Transparent Xerogel Matrices: Synthesis and Luminescence Properties; J. Phys. Chem.; 1996; pp. 20021-20026; Vol. 100; American Chemical Society.	
TT	O41	STRAVREV, K., KYNEV, K., ST. NIKOLOV, G., and DYAKOVITCH, V.A.; Semiempirical Assignment of the Electron Transitions in Manganese(II)-Doped II-VI Compounds; J. Phys. Chem. Solids; 1987; pp. 841-844; Vol. 48, No. 9; Pergamon Journals Ltd.	
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TT	O43	BACHIR, S., KOSSANYI, J., SANDOULY, C., VALAT, P., and RONFARD-HARET, J.C.; Electroluminescence of Dy ³⁺ and Sm ³⁺ Ions in Polycrystalline Semiconducting Zinc Oxide; J. Phys. Chem; 1995; pp. 5674-5679; Vol. 99; American Chemical Society.	
TT	O44	BACHIR, S., KOSSANYI, J., and RONFARD-HARET, J.C.; Electroluminescence of Ho ³⁺ Ions in a ZnO Varistor-Type Structure; Solid State Communications; 1993; pp. 859-863; Vol. 89, No. 10; Elsevier Science Ltd.; Great Britain.	
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TT	O46	ARKLES, B.; Commercial Applications of Sol-Gel-Derived Hybrid Materials; MRS Bulletin; 05/2001; pp. 402-407.	
TT	O47	MURRAY, C.E., NOYAN, I.C., and MOONEY, P.M.; Mapping of strain fields about thin film structures using x-ray microdiffraction; Applied Physics Letters; 11/17/2003; pp. 4163-4165; Vol. 83, No. 20; American Institute of Physics.	
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TT	O50	NOYAN, I.C., JORDAN-SWEET, J., LINIGER, E.G., and KALDOR, S.K.; Characterization of substrate-thin-film interfaces with x-ray microdiffraction; Applied Physics Letters; 06/22/1998; pp. 3338-3340; Vol. 72, No. 25; American Institute of Physics.	
TT	O51	TULLER, H.L.; ZnO Grain Boundaries: Electrical Activity and Diffusion; Journal of Electroceramics; 1999; pp. 33-40; Vol. 4:S1; Kluwer Academic Publishers; Boston.	
TT	O52	WESTIN, G., EKSTRAND, A., NYGREN, M., OSTERLUND, R., and MERKELBACH, P.; Preparation of ZnO-based Varistors by the Sol-Gel Technique; J. Mater. Chem.; 1994; pp. 615-621; Vol. 4.	
TT	O53	WANG, M., YANG, X., and WANG, F.; Properties of Sensitive Materials Mainly Composed of ZnO; J. Mater. Sci. Technol.; 2000; p. 204; Vol. 16, No. 2.	
TT	O54	BAPTISTA, J.L., and MANTAS, P.Q.; High Temperature Characterization of Electrical Barriers in ZnO Varistors; Journal of Electroceramics; 2000; pp. 215-224; Vol. 4:1; Kluwer Academic Publishers; The Netherlands.	
TT	O55	BRANKOVIC, Z., BRANKOVIC, G., POLETI, D., and VARELA, J.A.; Structural and electrical properties of ZnO varistors containing different spinel phases; Ceramics International; 2001; pp. 115-122; Vol. 27; Elsevier Science Ltd. And Techna S.r.l.	
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TT	O57	PANDEY, R., JAFFE, J.E., and KUNZ, A.B.; <i>Ab initio</i> band-structure calculations for alkaline-earth oxides and sulfides; Physical Review B; 04/15/1991; pp. 9228-9237; Vol. 43, No. 11; The American Physical Society.	
TT	O58	CANNEY, S.A., SASHIN, V.A., FORD, M.J., and KHEIFETS, A.S.; Electronic band structure of magnesium and magnesium oxide: experiment and theory; J. Phys. Condens. Matter; 1999; pp. 7507-7522; Vol. 11; IOP Publishing Ltd.	
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TT	O60	MIKAJLO, E.A., SASHIN, V.A., NIXON, K.L., SEOULE DE BAS, B., DORSETT, H.E., and FORD, M.J.; Band Structures of the Group I and II Oxides: Using EMS Measurements as a Test of Theoretical Models.	
TT	O61	JOHNSON, P.D.; Some Optical Properties of MgO in the Vacuum Ultraviolet; Physical Review; 05/15/1954; pp. 845-846; Vol. 94, No. 4.	

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TT	O62	NARAZAKI, A., TANAKA, K., HIRAO, K., HASHIMOTO, T., NASU, H., et al.; IR and XPS Studies on the Surface Structure of Poled ZnO-TeO ₂ Glasses with Second-Order Nonlinearity; Journal of the American Ceramic Society; 2001; pp. 214-217; Vol. 84.	
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TT	O64	GONZALEZ, R., CHEN, Y., SEBEK, R.M., WILLIAMS, G.P., WILLIAMS, R.T., et al.; Properties of the 800-nm luminescence band in neutron-irradiated magnesium oxide crystals; Physical Review B; 03/01/1991; pp. 5228-5233; Vol. 43, No. 7; The American Physical Society.	
TT	O65	BALZER, B., HAGEMEISTER, M., KOCHER, P., and LUDWIG, J.G.; Mechanical Strength and Microstructure of Zinc Oxide Varistor Ceramics; Journal of the American Ceramic Society; 2004; pp. 1932-1938; Vol. 87.	
TT	O66	SHENG, H., EMANETOGLU, N.W., MUTHUKUMAR, S., YAKSHINSKIY, B.V., FENG, S., et al.; Ta/Au Ohmic Contacts to n-type ZnO; Journal of Electronic Materials; 2003; p. 935; Vol. 32, No. 9.	
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TT	O68	XIONG, G., WILKINSON, J., MISCHUCK, B., TU ZEMEN, S., UCER, K.B., et al; Control of p- and n-type conductivity in sputter deposition of undoped ZnO; Applied Physics Letters; 02/18/2002; p. 1195; Vol. 80, No. 7.	
TT	O69	YAMAMOTO, T., and KATAYAMA-YOSHIDA, H.; Unipolarity of ZnO with a wide-band gap and its solution using codoping method; Journal of Crystal Growth; 2000; pp. 552-555; Vol. 214/215; Elsevier Science B.V.	
TT	O70	CHANG, R., MARKS, T., MASON, T., and POEPELMEIR, K.; n/p-Type Transparent Conductors; pp. 259-260.	
TT	O71	OLORUNYOLEMI, T., BIRNBOIM, A., CARMEL, Y., WILSON, O.C., LLOYD, I.K.; Thermal Conductivity of Zinc Oxide: From Green to Sintered State; Journal of the American Ceramic Society; 2002; pp. 1249-1253; Vol. 85.	
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Examiner Signature	Thien F. Tran	Date Considered	03-01-2006
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Application Number	10/849,345
		Filing Date	May 19, 2004
		First Named Inventor	Robert H. Burgener, II
		Group Art Unit	2811
		Examiner Name	Thien F. Tran
		Attorney Docket Number	3398.2.9
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Examiner Signature	Thien Tran	Date Considered	3-1-2006
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		First Named Inventor	Robert H. Burgener, II
		Group Art Unit	2811
		Examiner Name	Thien F. Tran
		Attorney Docket Number	3398.2.9
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		Examiner Name	Thien F. Tran
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Examiner Signature	<i>Thien Tran</i>	Date Considered	3-01-2006
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U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number - Kind Code ² (if known)			
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	F4					
	F5					
	F6					

Examiner Signature	Thien F. Tran	Date Considered	3-1-2006
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Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i> Sheet 1 Of 1		Complete if Known	
		Application Number	10/849,345
		Filing Date	May 19, 2004
		First Named Inventor	Robert H. Burgener, II
		Group Art Unit	2811
		Examiner Name	Thien F. Tran
		Attorney Docket Number	3398.2.9

U.S. PATENT DOCUMENTS					
Examiner Initials *	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number - Kind Code ² (if known)			
TT	U1	US-3,664,867-B1	05/23/1972	Galli et al.	
TT	U2	US-4,399,441-B1	08/16/1983	Vaughn et al.	

FOREIGN PATENT DOCUMENTS						
Examiner Initials *	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁶
		Country Code ³ - Number ⁴ - Kind Code ⁵ (if known)				
TT	F1	EP - 1219731-A1	07/03/2002	Yoshida, et al.		
TT	F2	JP 2002-68890-A1	03/08/2002	Ogata, et al.		

Examiner Signature	Thien F. Tran	Date Considered	03-01-2006
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